1 INTRODUCTION

THE SAN FRANCISCO BAY REGION

The San Francisco Bay estuarine system conveys the waters of the Sacramento and San Joaquin rivers into the Pacific Ocean. Located on the central coast of California (Figure 1-1), the Bay system functions as the only drainage outlet for waters of the Central Valley. It also marks a natural topographic separation between the northern and southern coastal mountain ranges. The region's waterways, wetlands, and bays form the centerpiece of the United States' fourth-largest metropolitan region, including all or major portions of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties.

Because of its highly dynamic and complex environmental conditions, the Bay system supports an extraordinarily diverse and productive ecosystem. Within each section of the Bay lie deepwater areas that are adjacent to large expanses of very shallow water. Salinity levels range from hypersaline to fresh water, and water temperature varies throughout the Bay system. These factors greatly increase the number of species that can live in this estuary and enhance its biological stability.

The Bay system's deepwater channels, tidelands, marshlands, freshwater streams, and rivers provide a wide variety of habitats that have become increasingly vital to the survival of several plant and animal species as other estuaries are reduced in size or lost to development. These areas sustain rich communities of crabs, clams, fish, birds, and other aquatic life and serve both as important wintering sites for migrating waterfowl and as spawning areas for anadromous fish.

THE BAY SYSTEM'S SURFACE & GROUND WATERS

The Sacramento and San Joaquin rivers, which enter the Bay system through the Delta at the eastern end of Suisun Bay, contribute almost all the freshwater inflow to the Bay. Many small rivers and streams also convey fresh water to the Bay system. The rate and timing of these freshwater flows are among the most important factors influencing physical, chemical, and biological conditions in the Estuary. Much of the freshwater inflow, however, is trapped upstream by the dams, canals, and reservoirs of California's water diversion projects, which provide vital water to industries, farms, homes, and businesses throughout the state. This freshwater diversion has sparked statewide controversy over possible adverse effects on the Estuary's water quality, fisheries, and ecosystem.

Flows in the region are highly seasonal, with more than 90 percent of the annual runoff occurring during the winter rainy season between November and April. Many streams go dry during the middle or late summer. For example, the Napa River, which is least affected by upstream regulation, clearly shows the seasonal nature of runoff. Only 4-1/2 percent of this river's average annual runoff occurs during the summer months.

Groundwater is an important component of the hydrologic system in the San Francisco Bay region. Groundwater provides excellent natural storage, distribution, and treatment systems. Groundwater also supplies high quality water for drinking, irrigation, and industrial processing and service. As an important source of freshwater replenishment, groundwater may also discharge to surface streams, wetlands, and San Francisco Bay.

A variety of historical and ongoing industrial, urban, and agricultural activities and their associated discharges degrade the groundwater quality, including industrial and agricultural chemical spills, underground and above-ground tank and sump leaks, landfill leachate, septic tank failures, and chemical seepage via shallow drainage wells and abandoned wells. In addition, saltwater intrusion directly attributed to over-pumping has degraded the purity of some groundwater aquifers.

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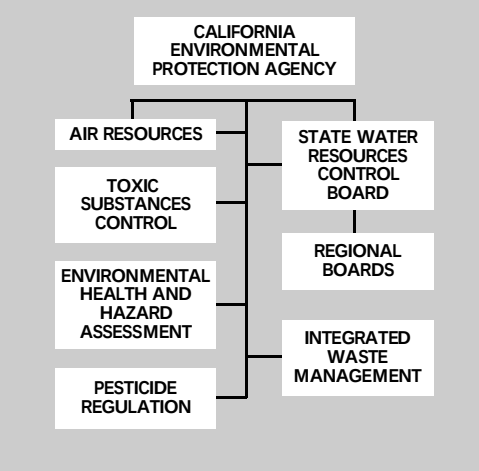
These adverse impacts on groundwater quality often have long-term effects that are costly to remediate. Consequently, as additional discharges are identified, source removal, pollution containment, and cleanup must be undertaken as quickly as possible. Activities that may potentially pollute groundwater must be managed to ensure that groundwater quality is protected.

PROTECTING SAN FRANCISCO BAY: THE REGIONAL BOARD

Because of its unique characteristics, the San Francisco Bay estuarine system merits special protection. The adverse effects of waste discharges must be controlled. Extensive upstream water diversions must be limited, and their effects mitigated. To address these and other water issues, the California Legislature established the State Water Resources Control Board (State Board) and the nine Regional Water Quality Control Boards in 1967. Operating under the provisions of the California Water Code, their unique relationship couples state-level coordination and regional familiarity with local needs and conditions. Their joint actions constitute a comprehensive program for managing water quality in California, as well as for effective state administration of federal water pollution control laws.

ORGANIZATION OF THE CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY



The State Board administers water rights, water pollution control, and water quality functions for the state as part of the California Environmental Protection Agency. It provides policy guidance and budgetary authority to the Regional Water Quality Control Boards, which conduct planning, permitting, and enforcement activities. The State Board shares authority for implementation of the federal Clean Water Act and the state Porter-Cologne Act with the Regional Boards.

The San Francisco Bay Regional Water Quality Control Board (Regional Board) regulates surface water and groundwater quality in San Francisco Bay. The area under the Regional Board's jurisdiction comprises all of the San Francisco Bay segments extending to the mouth of the Sacramento-San Joaquin Delta (Winter Island near Pittsburg).

California's governor appoints the nine-member Regional Board, whose members serve for four-year terms. Board members must reside or maintain a place of business within the region and must be associated with or have special knowledge of specific activities related to water quality control. Members of the Regional Board serve without pay and conduct their business at regular meetings and frequent public hearings where public participation is encouraged.

The Regional Board's overall mission is to protect surface waters and groundwaters of the San Francisco region. The Regional Board carries out its mission by:

- Addressing regionwide water quality concerns through the creation and triennial update of a Water Quality Control Plan (Basin Plan);
- Preparing new or revised policies addressing regionwide water quality concerns;
- Adopting, monitoring compliance with, and enforcing waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permits;
- Providing recommendations to the State Board on financial assistance programs, proposals for water diversion, budget development, and other statewide programs and policies;
- Coordinating with other public agencies that are concerned with water quality control; and
- Informing and involving the public on water quality issues.

WATER QUALITY CONTROL PLAN

By law, the Regional Board is required to develop, adopt (after public hearing), and implement a Water Quality Control Plan (Basin Plan) for the San Francisco Bay region. The Basin Plan is the master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the San Francisco

Bay region. The plan must include:

- A statement of beneficial water uses that the Regional Board will protect;
- The water quality objectives needed to protect the designated beneficial water uses; and
- The strategies and time schedules for achieving the water quality objectives.

The Regional Board first adopted a plan for waters inland from the Golden Gate in 1968. After several revisions, the first comprehensive Water Quality Control Plan for the region was adopted by the Regional Board and approved by the State Board in April 1975. Subsequently, major revisions were adopted in 1982, 1986, 1992, and 1995. Each proposed amendment to the Basin Plan is subject to an extensive public review process. The Regional Board must then adopt the amendment, which is then subject to approval by the State Board. In most cases, the Office of Administrative Law and the U.S. Environmental Protection Agency (U.S. EPA) must approve the amendment as well.

The basin planning process drives the Regional Board's effort to manage water quality. The Basin Plan provides a definitive program of actions designed to preserve and enhance water quality and to protect beneficial uses in a manner that will result in maximum benefit to the people of California. The Basin Plan fulfills the following needs:

- The U.S. Environmental Protection Agency requires such a plan in order to allocate federal grants to cities and districts for construction of wastewater treatment facilities.
- The Plan provides a basis for establishing priorities as to how both state and federal grants are disbursed for constructing and upgrading wastewater treatment facilities.
- The Plan fulfills the requirements of the Porter-Cologne Act that call for water quality control plans in California.
- The Plan, by defining the resources, services, and qualities of aquatic ecosystems to be maintained, provides a basis for the Regional Board to establish or revise waste discharge requirements and for the State Board to establish or revise water rights permits.
- The Plan establishes conditions (discharge prohibitions) that must be met at all times.

The intent of this comprehensive planning effort is to provide positive and firm direction for future water quality control. However, adequate provision must be made for changing conditions and technology. The Regional Board will review the Basin Plan at least once every three years. Unlike traditional plans, which often become obsolete within a few years after their preparation, the Basin Plan is updated as deemed necessary to maintain pace with technological, hydrological, political, and physical changes in the region.

WATERSHED MANAGEMENT PLANNING

The Regional Board has administered the NPDES program for nearly two decades to control municipal and industrial wastewater discharges. At the same time, however, urban and agricultural runoff have continued, for the most part unchecked. Stormwater runoff now contributes much of the pollutant loading to rivers, streams, bays, lakes, and lagoons in the San Francisco Bay region. Over the next few years, the Regional Board will focus a significant amount of effort on controlling pollution from urban and agricultural runoff. The emphasis will be on preventing pollution before it occurs by managing resources more carefully, as opposed to cleaning up pollution after the fact.

To help accomplish this goal, the Regional Board is initiating watershed management planning for several counties. The Regional Board firmly believes that watershed planning and protection efforts will not be effective unless solutions are defined and implemented at the local level. An effective watershed management plan will require formulating water quality goals and objectives for watershed protection and enhancement, then committing to specific tasks that will eventually allow the objectives, and ultimately the goals, to be met. Tasks could include a wide range of actions, such as improving coordination between regulatory and permitting agencies, increasing citizen participation in watershed planning activities, improving public education on water quality and protection issues, and enforcing current regulations on a more consistent basis.

THE SAN FRANCISCO ESTUARY PROJECT

The Regional Board has been an active participant in the San Francisco Estuary Project, a cooperative program aimed at promoting effective, environmentally sound management

of the San Francisco Bay Estuary while protecting and restoring its natural resources. In 1993, the Estuary Project reached its goal of developing a *Comprehensive Conservation and Management Plan* (*CCMP*). The *CCMP* addresses five critical concerns identified by the Project's broad-based advisory committees: decline of biological resources; increased pollutants; freshwater diversion and altered flow regime; dredging and waterway modification; and intensified land use.

Implementation of the *CCMP* 's over 140 recommended actions is now underway. The Regional Board will serve as lead state agency, undertaking responsibility for ensuring that *CCMP* actions are carried out. The Estuary Project's Public Involvement and Education Program, which seeks to inform and involve the public in Estuary issues, is currently housed at the Regional Board offices.